



TEMPEST
lighting inc.

User Manual

Thunder Lighting Enclosures



**Featuring MiniDEC™
Control Technology**



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For the following products,
manufactured after July 2012

Thunder 6660
Thunder 6690
Thunder 6600
Thunder 6700
Thunder 6700

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July, 2012



Declaration of Conformity

This is to certify that the following products

6600.IN Thunder 6600 Enclosure
6610.IN Thunder 6610 Enclosure, DEC3 Control
6650.IN Thunder 6650 Scan Enclosure
6660.IN Thunder 6660 Scan Enclosure, DEC3 Control
6700.IN Thunder 6700 Enclosure
6710.IN Thunder 6710 Enclosure, DEC3 Control
6750.IN Thunder 6750 Scan Enclosure
6760.IN Thunder 6760 Scan Enclosure, DEC3 Control
6800.IN Thunder 6800 Enclosure
6810.IN Thunder 6810 Enclosure, DEC3 Control
6850.IN Thunder 6850 Scan Enclosure
6860.IN Thunder 6860 Scan Enclosure, DEC 3 Control

are in Compliance with the following standards or specifications according to the EMC Directive 89/336/EEC:

**EN55015, EN61000-3-4, EN61000-3-5, EN61000-4-2, EN61000-4-3, EN61000-4-4, pr
EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11**

and are in compliance with the following standards or specifications according to the Low Voltage Directive 73/23/EEC.

EN60598-1

This declaration is made by the manufacturer

Tempest Lighting, Inc.
13110 Saticoy Street, Unit C
North Hollywood, CA 91411, USA

This declaration is based on tests that were conducted on the submitted samples of the above-mentioned products. Detailed results can be referred to test reports CET.TE200909 and LVT.Te200909.

Dated: October 26th, 2009
Signature
Tempest Lighting Inc.





This is to certify that the following products

6600.US Thunder 6600 Enclosure
6610.US Thunder 6610 Enclosure, DEC3 Control
6650.US Thunder 6650 Scan Enclosure
6660.US Thunder 6660 Scan Enclosure, DEC3 Control
6700.US Thunder 6700 Enclosure
6710.US Thunder 6710 Enclosure, DEC3 Control
6750.US Thunder 6750 Scan Enclosure
6760.US Thunder 6760 Scan Enclosure, DEC3 Control
6800.US Thunder 6800 Enclosure
6810.US Thunder 6810 Enclosure, DEC3 Control
6850.US Thunder 6850 Scan Enclosure
6860.US Thunder 6860 Scan Enclosure, DEC 3 Control

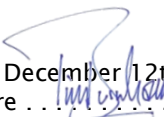
Have been tested and approved to standards UL 508 (electrical) and UL 50 (environmental), as NEMA 3R enclosures, for use in the United States and Canada.

This declaration is made by the manufacturer

Tempest Lighting, Inc.
13110 Saticoy Street, Unit C
North Hollywood, CA 91605, USA

This declaration is based on tests that were conducted on the submitted samples of the above mentioned products.

Listing Report No. 3198609LAX-001a refers.

Dated: December 12th, 2010
Signature 
Tempest Lighting Inc

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1 Introduction

Thank you for purchasing the Thunder enclosure. It will serve you for many years, protecting your stage spotlights and effects projectors from the elements.

Products Covered By this Manual

6660 Thunder, Martin Atomic Strobe, all versions

6690 Thunder, Rosco X-Effect, all versions

6600 Thunder, all versions

6700 Thunder Stretch, all versions

6800 Thunder X-Stretch, all versions

This manual covers all versions of the products shown here, manufactured after the date of publication.

Using This Manual

Please read this manual in its entirety before starting work. All the information contained is important, and should be read carefully before proceeding. Heed all warnings and advisories.

Icon Key:

① Valuable information







⚡ Electrical Warning

🚫 Safety Information

2 Installation

2.1 Safety and Warnings

These warnings are for your protection. Failure to comply may result in serious injury or death. Tempest Lighting, Inc. assumes no responsibility for damages or injury incurred by misuse or mishandling of product.

-  **Do not** attempt to install or operate the enclosure before fully reading and understanding this manual
-  **Never** allow anyone who has not read this manual to open the enclosure or perform maintenance on the equipment within.
-  **Never** leave the enclosure unattended when open.
-  **Always** make sure all bolts and latches are tight and safety locks are in place after performing any form of maintenance on the unit.
-  **Do not** open any electrical boxes until power has been shut off to all supply lines to the enclosure (including the one powering the equipment).
-  **Do not** open the enclosure in wet weather.

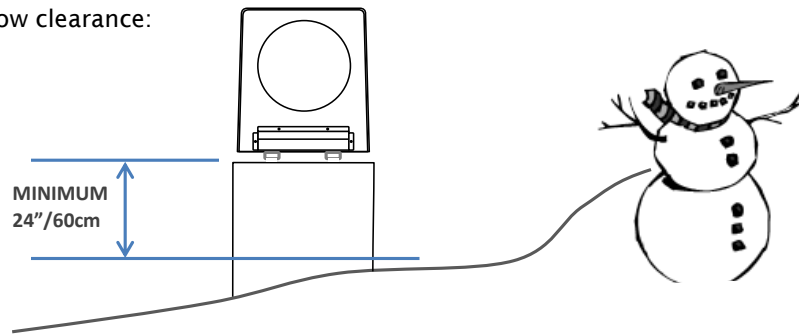
2.2 Tools and Equipment

To install the enclosure, you will need the following items:

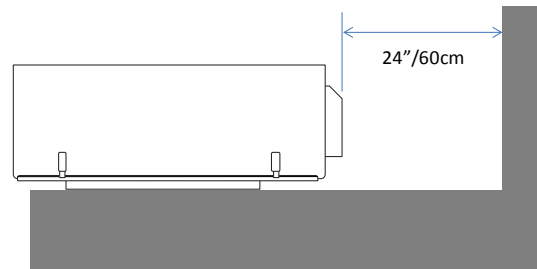
- ① Crescent wrench
- ① Phillips screwdriver
- ① Terminal screwdriver
- ① Proper wiring installation equipment (for line power and signal wiring)
- ① Any equipment listed in the equipment manufacturer's equipment-specific installation directions

Planning

- ① Snow clearance:



- ① Allow at least 24"/60cm clearance behind enclosure for access and ventilation.



- ① Enclosures with MiniDEC Control should be powered during daylight hours.
- ① Enclosures with Digital Enclosure Control **MUST** be powered 24/7/365.

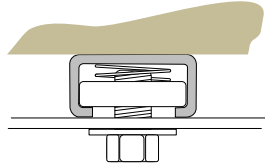
 **Warning:** In most cases this installation cannot be safely completed by 1 person.

2.3 Mounting the Thunder Enclosure

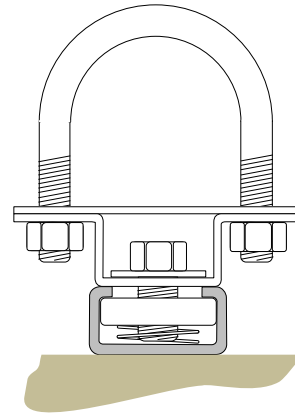
- ① The Thunder enclosure must be mounted on or under a solid structure rated for the weight of the enclosure, the equipment inside it, and at least one person.
- ① Snow – if installed outside in cold regions, the bottom of the Thunder enclosure must be at least 2' (60cm) above maximum height of any snowfall or drifting snow, subject to local conditions. If snow is not a consideration, then enclosure may sit on the ground as long as proper drainage is provided.
- ① LEAVE ADEQUATE CLEARANCE BEHIND ENCLOSURE FOR WIRING AND VENTILATION
- ① *Tempest Lighting recommends the use of stainless steel mounting hardware.*

The Thunder enclosure is provided with a pair of Unistrut channels on the enclosure base, for mounting to your structure. You may use standard Unistrut accessories, or purchase either of the mounting kits available from Tempest Lighting – four kits are recommended per enclosure.

Mounting Kits



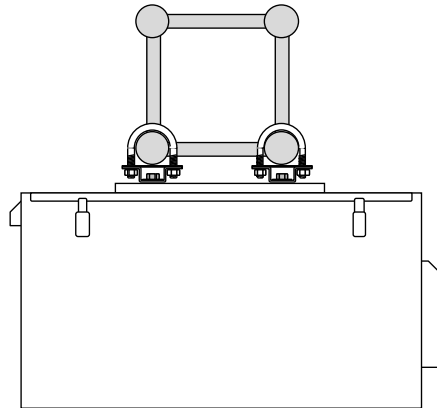
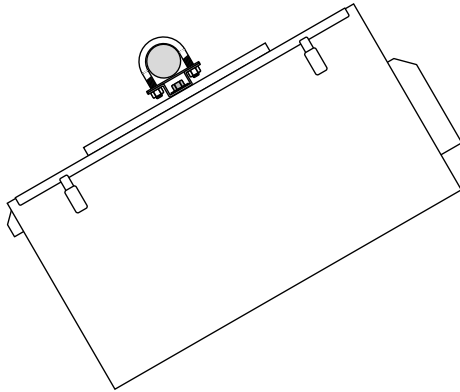
4900.MB Stainless Steel Unistrut channel nut, bolt and washer. Four required per enclosure.



4900.MC Stainless Steel Unistrut channel nut, bolt and pipe clamp, for pipes 1.5" (38mm) to 2" (50mm) OD. Four required per enclosure.

4925.MC Stainless Steel Unistrut channel nut, bolt and pipe clamp, for pipes 2" (50mm) to 2.5" (64mm) OD. Four required per enclosure.

Mounting on a Pipe or Truss

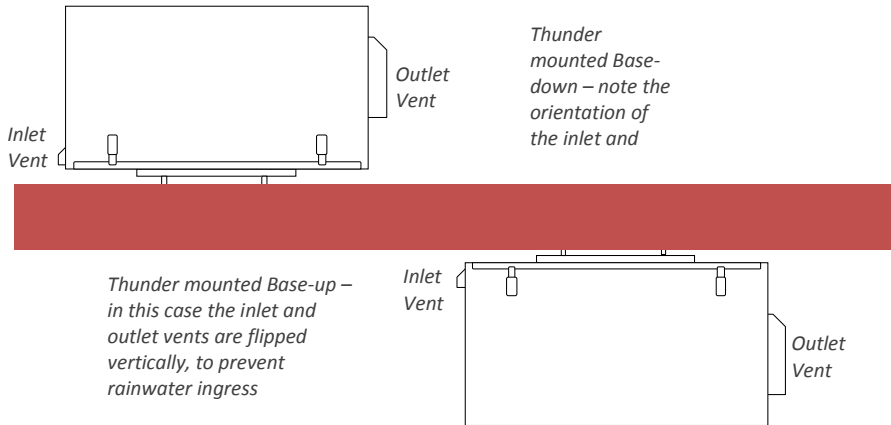


Use two clamps to mount to a pipe, or to mount from a truss at an angle.

Use four clamps to mount parallel to a truss.

2.4 Mounting Base-down and Base-up

All Thunder enclosures are designed to be mounted base-down, on a solid structure, using Unistrut mounting hardware. They may also be suspended from an overhang, ceiling or truss, using the same hardware.

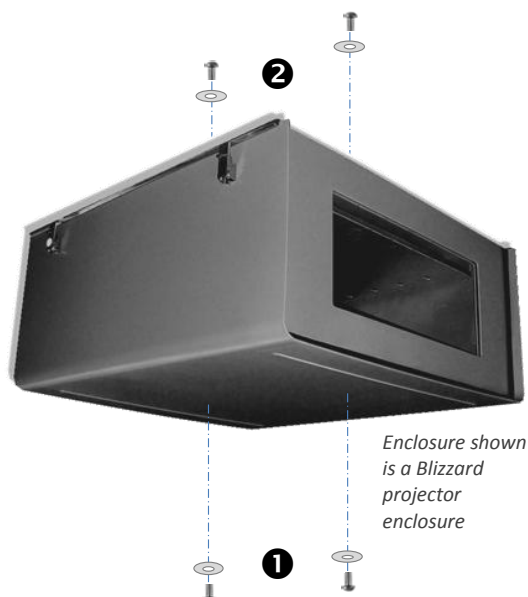


It is the responsibility of the installer to ensure that all mounting points are secure and conform to local safety regulations. Tempest Lighting Inc. accepts no responsibility for damage or injury arising from inappropriate or unsafe installation.

2.5 Drainage

Drainage holes are provided in the top and bottom of the enclosure. The holes in the cover (top) are plugged with 10-32 screws and sealing washers.

Important – Drainage in base-up installations:



- 1 Remove the drainage plug screws from the cover ❶
- 2 Replace in the corresponding holes in the base ❷

3 Wiring

3.1 Electrical Preparation

⚡ **All electrical work must be carried out by a properly licensed electrician. Failure to observe this point will void the factory warranty for the Tempest Enclosure and possibly the equipment housed inside.**

- 1 Before starting work, switch off power to the branch circuit, carefully following lockout and tag-out procedures. Failure to do so could cause serious injury or death.
- 2 Two electrical junction boxes will be required within a short distance of the Thunder enclosure for:
 - AC supply wiring
 - DMX control wiring

Your Thunder enclosure is supplied fitted with two cable entry points, for Power and DMX signal cables.

The cable entries are suitable for use with standard conduit fittings. US size ½", international 20mm. Tempest recommends the use of flexible, outdoor-rated conduit for the last few feet (1m) to the enclosure.

All junction boxes must be installed in accordance with local electrical codes and should be located near the permanent installation of the enclosure. Each junction box requires a length of flexible conduit, long enough to reach from the junction box to the enclosure conduit fittings. Leave slack for positioning of enclosure, and enough space behind the enclosure for ventilation.

The AC supply must be protected by a fuse or circuit breaker of a rating suitable for the equipment.

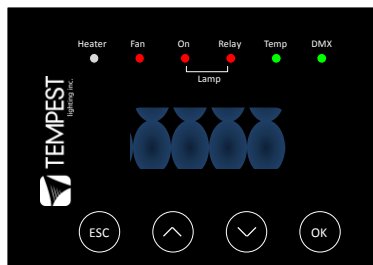
Thunder Enclosure Power Requirement:

Standard Thunder enclosures with MiniDEC control	20W
Thunder enclosures with DEC3 control option	520W

The user may connect the fan and the equipment to the same switched supply, or run them separately, according to need (see below).

Note that for temporary installation, the conduit fittings may be replaced with outdoor-rated cable entry glands, at the user's discretion.

3.2 Which type of controller do you have?



If you have the DEC3 control option, there will be a panel on the back of your enclosure like this.

Turn to the DEC3 Appendix at the back of this manual for wiring and operation instructions.

If you do NOT have the DEC3 display, your enclosure is equipped with a MiniDEC controller. Please use the following instructions.

3.3 Accessing the MiniDEC Controller

Remove the enclosure cover.

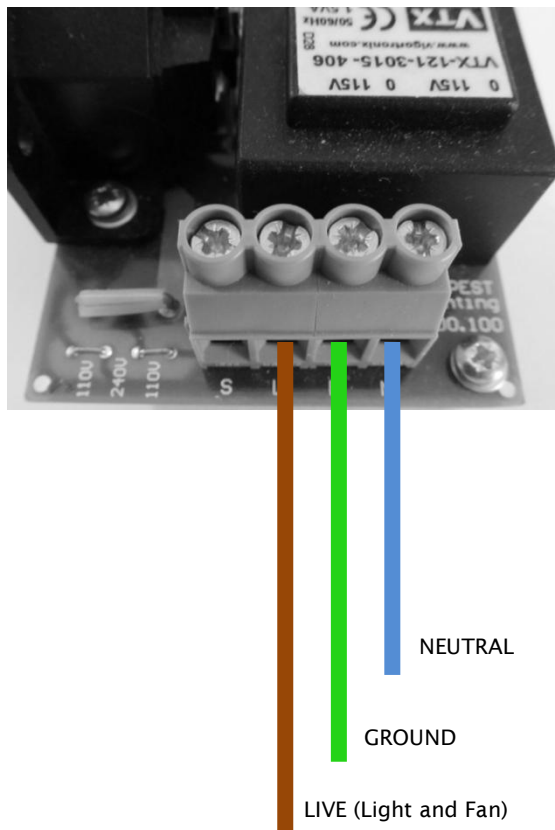
Remove the MiniDEC cover under the fan. You will see the MiniDEC circuit board on the inside of the MiniDEC cover.

Bring your AC supply to the conduit entry under the MiniDEC cover.

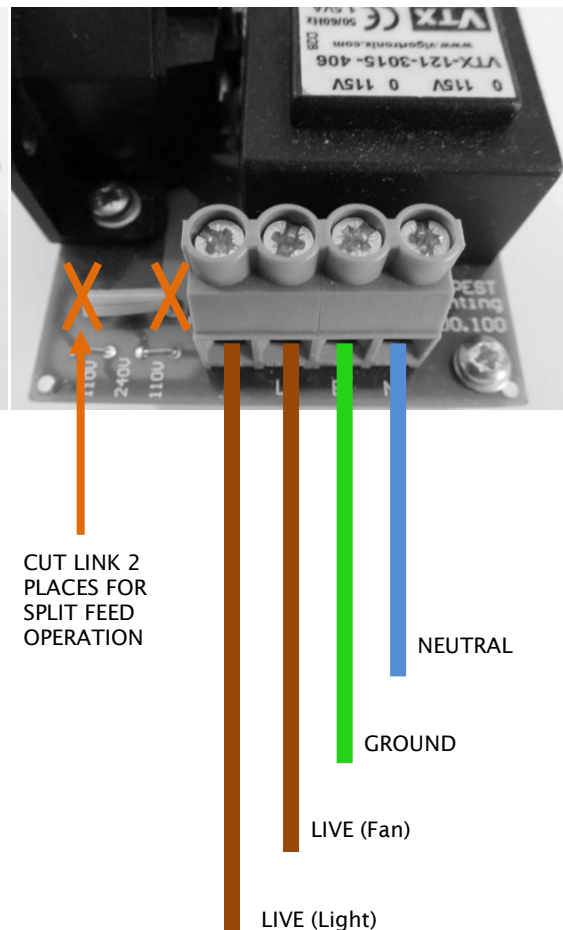
Note: use the conduit entry point outside the electrical cover for DMX wiring.

3.4 Connect AC Wiring to MiniDEC Controller

Single Feed Operation



Split Feed Operation



Single Feed Wiring

Feed the controller with a single maintained supply. The light must be switched off when needed using the lighting control system.

Thunder ships configured for single feed wiring operation.

DO NOT CONNECT SINGLE FEED WIRING TO THE OUTPUT OF A DIMMER.

Dual Feed Wiring

You may switch off the supply to the light without interfering with the cooling fan operation. Connect feeder wires as shown, **AND CUT THE COPPER LINK ON THE MiniDEC BOARD IN TWO PLACES, AS SHOWN.** Fan circuit should be maintained 24/7.

MiniDEC Operation


The MiniDEC controller monitors current going to the light fixture inside the Thunder enclosure, and also heat inside the enclosure. When it detects that the light is on and/or the internal temperature is getting warm, MiniDEC runs the enclosure fan. For best results, enclosures must be connected to live power at all times.

3.5 Replace MiniDEC Cover

3.6 DMX Wiring

A separate conduit entry is provided for DMX wiring. Pull DMX cables into enclosure and terminate, following instructions provided by the luminaire manufacturer.

4 Mounting the Luminaire in the Thunder Enclosure

 If the Thunder enclosure is suspended from a ceiling or overhang, this must be done by two people.

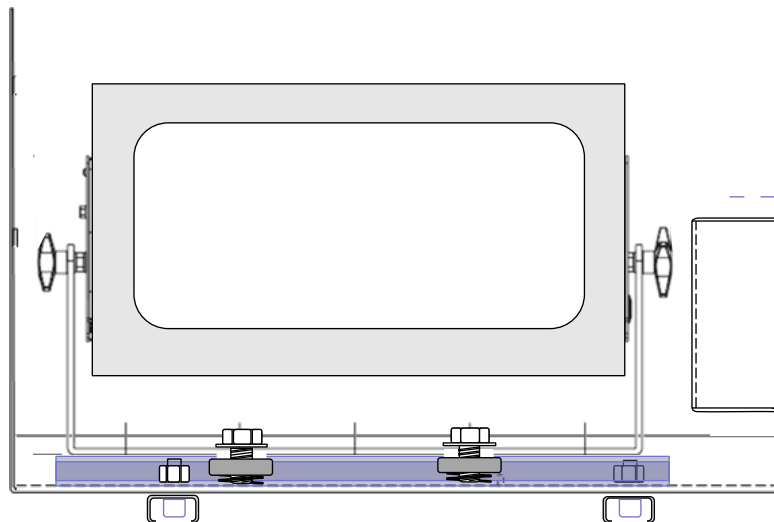
1. Place the equipment on the equipment tray. If hanging the equipment upside-down, one person must hold the equipment in position, while another person secures it in place. Ensure that the equipment is securely held before proceeding further.



2. For most theatrical lights, adjust the yoke to the shortest available setting before installing in the enclosure, as shown here.
3. Move the Unistrut Channel nut into position, to line up with the fixture yoke.
4. Bolt through the yoke into the channel nut and tighten firmly in place, using the hardware provided.

NOTE: Mounting the Atomic Strobe in the 6660 Enclosure

The Atomic Strobe enclosure has its window on the SIDE of the enclosure, and the strobe faces sideways, mounted on two M12 spring-bolts provided.



Adjust the position of the spring bolts in the Unistrut to correspond with two of the mounting holes in the Atomic Strobe yoke.

5. Connect Luminaire power and DMX

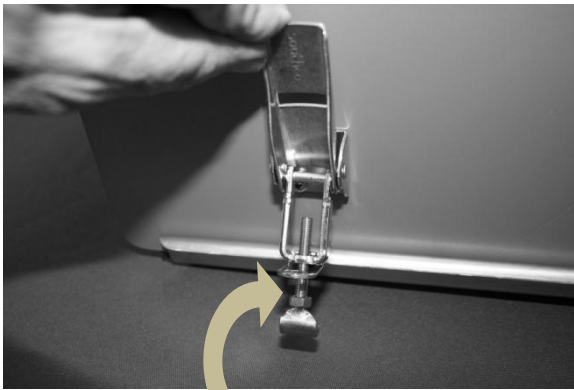
Connect the DMX IN and OUT luminaire connections as specified by the luminaire manufacturer

Connect the luminaire power cable to the IEC outlet provided on the MiniDEC controller. If necessary, shorten the length of the luminaire power cord and install the rewirable IEC plug provided with your Thunder enclosure.

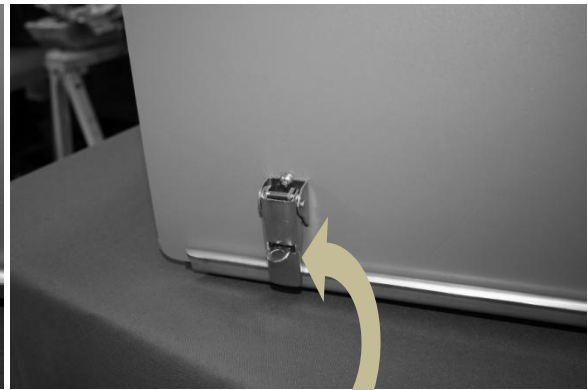
Test all luminaire functions.

Replace MiniDEC Cover.

Replace enclosure cover and secure all latched tightly.



The latch tension is adjusted by turning the screw - clockwise to tension, anti-clockwise to loosen.



Insert a padlock in one or more security rings for additional security.



5 Operation

While there are no specific operational actions required for normal use, the following points should be kept in mind.

- ① The enclosure should be connected to a live circuit at all times except when maintenance is being carried out.
- ① Unless the enclosure or equipment is undergoing routine maintenance, the enclosure should be closed and securely latched at all times.
- ① Only authorized personnel should open the enclosure (see maintenance warnings in the next chapter).





6 Routine Maintenance

It is very important to perform routine maintenance on both the enclosure and the equipment inside it. Failure to do so may reduce lifetime for both the enclosure and the equipment.

Note

Maintenance schedules depend on location and environment. The intervals given here are general minimum guidelines. It is up to the user to judge whether maintenance should be carried out more frequently. We recommend doing these tasks no less often than mentioned here.

Safety

-  As the enclosure is a powered unit with moving parts, it is necessary to keep safety in mind while performing routine maintenance. Although maintenance can be performed while the enclosure is powered, it is safer to carry it out with the power disconnected with proper lockout and tag out procedures followed.
-  Be aware that once the enclosure has had power applied to it, the fan will start to turn. Make sure that your hands are clear of the fan before applying power to the enclosure.
-  Only authorized personnel should perform maintenance on the enclosure or equipment
-  Do not service the unit in the rain or other adverse weather conditions (snow, sleet, high winds, etc.).

Inspection Checklist: – Every Three (3) Months

- ☐ Glass should be clean and free of cracks
- ☐ Enclosure should be free of debris both inside and out
- ☐ Bolts and tie-down straps should be tight
- ☐ Rubber seals should be in good condition. Check seals inside and out for gaps.
- ☐ Fan should be functioning and not making excessive noise
- ☐ Filters should be clean

Air Filter – Every Three (3) Months

The air filter should be removed and cleaned on a regular basis. To remove filter, pull it directly out of the intake vent. The filter can be cleaned by running water from a hose and do not require any special solution.

To reinstall, carefully push filter back into the cowl molding.

Case – As Needed

The outside of the case should be cleaned as needed. The case should be cleaned with a wet cloth and mild detergent (if necessary). Do not use a direct spray from a hose to clean the case.

Equipment

Review the manufacturer's instructions for proper maintenance of your Luminaire. Remember, the enclosure simply protects the equipment inside it and is not a substitute for regular maintenance.

7 Troubleshooting

This is a guide to the general symptoms, problems, and solutions that may occur during the usage of your enclosure. However, it is important to remember that problems may occur within the equipment itself and these must also be considered.

Equipment does not have power.

Check power supply wiring and voltage.

Fan is not spinning

Fan cords may have become disconnected. Check connections between fan and cord.

Fan may be obstructed. Shut off power to enclosure and check for obstructions. Turn power back on to see if fan will start spinning. If fan does not turn then enclosure is not receiving power.

Turn off all power and check wiring. If the wiring is correct, contact technical support.

Equipment does not have power.

Check equipment power switch. If switch is on, check wiring and supply switch/circuit breaker.

Equipment turns on and off repeatedly over short span of time.

Check that vent areas and airways are clear. If so, ambient temperature may be too high, or equipment may have internal problem.

Excessive water in enclosure.

Seal leak. Repair with silicone sealant, or replace seal.

8 Limited Warranty

INSPECTION/WARRANTY/RETURNS.

A. Customer, at its sole expense, shall inspect all Goods promptly upon receipt and accept all Goods that conform to the specifications or catalog. All claims for any alleged defect in or failure of the Goods or Seller's performance to conform to the Contract, capable of discovery upon reasonable inspection, must be set forth in a written rejection notice detailing the alleged non-conformity, and be received by Seller within thirty (30) calendar days of Customer's receipt of the Goods. Failure by Customer to notify Seller of the alleged non-conformity within thirty (30) days will be conclusive proof that the Goods have been received by Customer without defects or damage, and in the quantities specified on the bill of lading and shall constitute an irrevocable acceptance of the Goods and a waiver of any such claim in connection with the Goods.

B. Seller warrants to Customer only that the Goods will be free from defects in material and workmanship at the time of delivery and, subject to the exceptions and conditions set forth below, for the following period (the "Warranty Period"): twelve (12) months from the date of shipment by Seller. Seller may provide additional years of warranty coverage beyond 12 month, at the rate of 2.5% of the net sale price per year, up to a total of four additional years' coverage beyond the standard 12 month warranty period. Seller will remedy a defect as set forth in paragraph 7 D, below, (the "Warranty"). The Warranty is subject to each of the following exceptions and conditions:

1. Customer must promptly (and in all events within the Warranty Period) notify Seller of any alleged defect in a written notice (the "Notice") which shall set forth the quantity, catalog number, finish, original purchase order number, Seller's invoice number on which Goods were originally billed and a statement of the alleged defect, along with digital photographs showing such defects where feasible.

2. The Warranty shall not apply: (i) to any claimed defect that was capable of discovery upon reasonable inspection and deemed to be waived under paragraph A, above; (ii) to any Goods that have been subject to misuse, abnormal service or handling, or altered or modified in design or construction; (iii) to any Goods repaired or serviced by any person other than Seller's authorized service personnel or to Goods installed other than according to installation instructions, or (iv) with respect to normal wear and tear.

3. Seller makes no Warranty with respect to parts or components that are not the product of Seller, and specifically makes no warranty whatsoever for equipment housed inside enclosure products manufactured by Seller.

4. The Warranty is Seller's exclusive warranty with respect to the Goods. Seller makes no warranties, guarantees or representations, express or implied, to Customer except as set forth in this section. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR USE OR FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED AND DISCLAIMED.

C. Seller will accept the return of Goods properly rejected under paragraph A, above, or as to which Notice of an alleged breach of Warranty has been timely given and such Goods may be returned to Seller, freight prepaid, but only upon Customer's receipt of Seller's written return material authorization ("RMA") and shipping instructions. The RMA shall be void if the Goods are not received within 45 days after issuance of the RMA. No deduction or credit in respect of any rejected or returned Goods shall be taken until Customer has received Seller's further written deduction or credit/authorization following Seller's inspection to confirm nonconformity or defect. Seller will charge to Customer any and all costs incurred by Seller in connection with the handling, shipping, inspection and disposition of any returned Goods that are determined by Seller not to have been nonconforming upon Delivery or as to which the warranty hereunder is not applicable.

D. UPON ANY PROPER RETURN PURSUANT TO PARAGRAPH C, ABOVE, WHETHER IN CONNECTION WITH A REJECTION OF GOODS OR AN ALLEGED BREACH OF WARRANTY AND BASED UPON THE CONDITIONS SET FORTH IN THIS PARAGRAPH 7, SELLER AGREES THAT IT WILL, AS THE SOLE AND EXCLUSIVE REMEDY UNDER THE CONTRACT OR OTHERWISE, FOR ANY NONCONFORMITY OR BREACH OF WARRANTY, AND AT SELLER'S SOLE ELECTION: (i) REPAIR SUCH GOODS; OR (ii) REPLACE SUCH GOODS.

Tempest Product Support.

Step 1: First contact your local Dealer for support. Your dealer is best placed to respond quickly to your needs.

Step 2: If your dealer is unable to answer your questions please contact our Sales Office:

Tempest Lighting, Inc.

13110 Saticoy Street, Unit C

North Hollywood, CA 91605, USA

Tel +1 818 787 8984

Fax +1 818 982 5582

support@tempestlighting.com

Visit our web site for current information and specifications:

www.tempestlighting.com

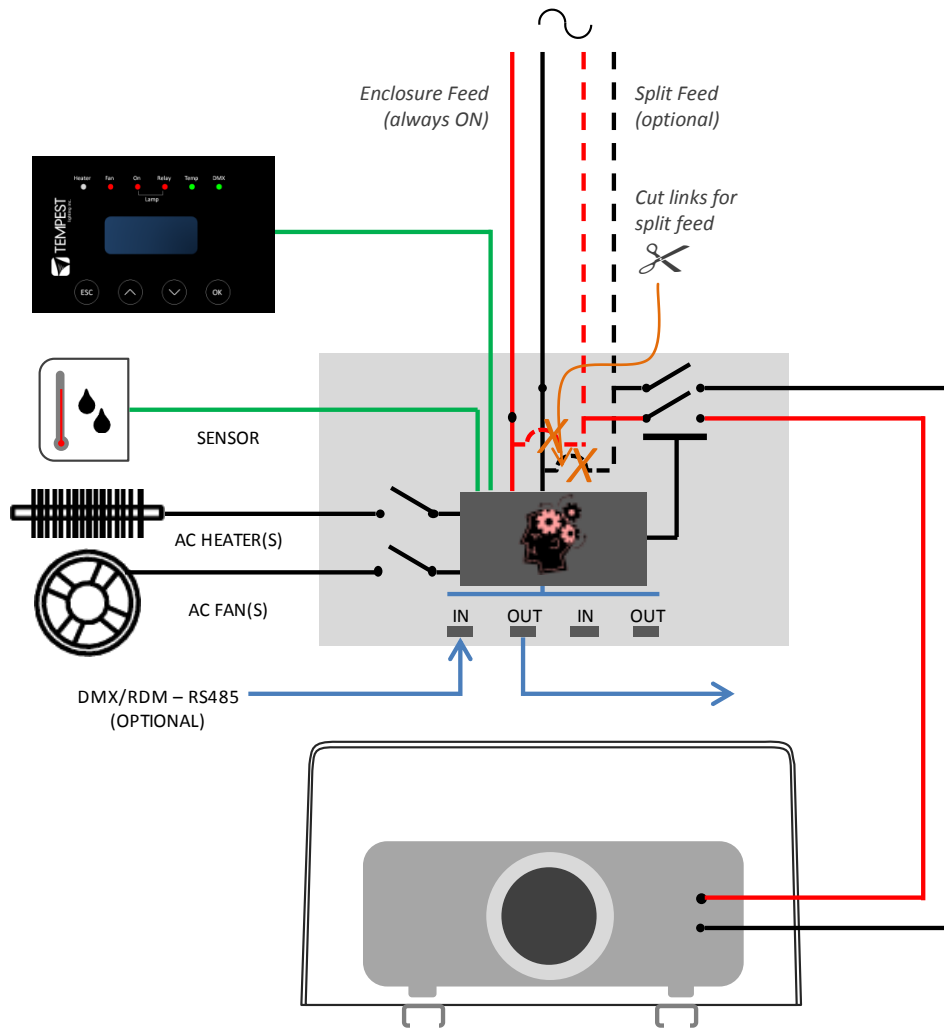
Appendix: Digital Enclosure Control – DEC3.2™

This appendix is provided for enclosures fitted with Tempest's DEC3.2 and up controllers.



DEC3.2™ – that's *Digital Enclosure Control, third Generation, revision 2* – is the brain of your Tempest enclosure. It will maintain the internal environment in a comfortable temperature and humidity range, and prevent condensation – the real killer of outdoor equipment. DEC3.2 monitors internal temperature, humidity and lamp current at all times, and uses this information to control the enclosure's lamp relay, fan(s) and heater(s). It can report back over the DMX cable, using the RDM protocol (Remote Device Management) if desired.

DEC3.2 Schematic



DEC3.2 Main Functions

- 1 Sense current to projector (lamp on/off)
- 2 Record lamp hours
- 3 Monitor temperature and humidity inside Enclosure
- 4 Maintain temperature at safe operating level
- 5 Prevent condensation
- 6 Isolate projector in case of unsafe temperature
- 7 Report status over RDM
- 8 (Optional) remote projector relay control over DMX

DEC3.2's function depends on whether the projector lamp is on or off:

Lamp ON

- Fans on
- Heater off
- Monitor temperature and humidity
- Isolate projector power if temperature exceeds max limit
- Record lamp hours

Lamp OFF

- Monitor temperature and humidity
 - If temp below bottom setting, run heater
 - If temp above top setting, run fans
 - If temp in normal range, run anti-condensation routine

Factory Settings – Basic Mode

In most applications, DEC3.2 will operate correctly with its factory default settings, in Basic operating mode.

You do not need to do anything. Please skip to the **Power Connections** section below.

If your needs are more complex, read on.

Operating Modes

DEC3.2 may operate in one of four modes, set using either the Front Panel or by RDM control. In all configurations, the projector inside the enclosure may also be an RDM enabled device.

Basic Mode (factory setting)

- Standard temperature settings
- DMX and RDM disabled
- Best for standalone operation

Monitor Mode

- As Basic mode, plus:
- RDM status reporting
- RDM configuration – settings may be changed remotely or at the enclosure control panel
- DEC3.2 does not require a DMX signal to operate

Control Mode

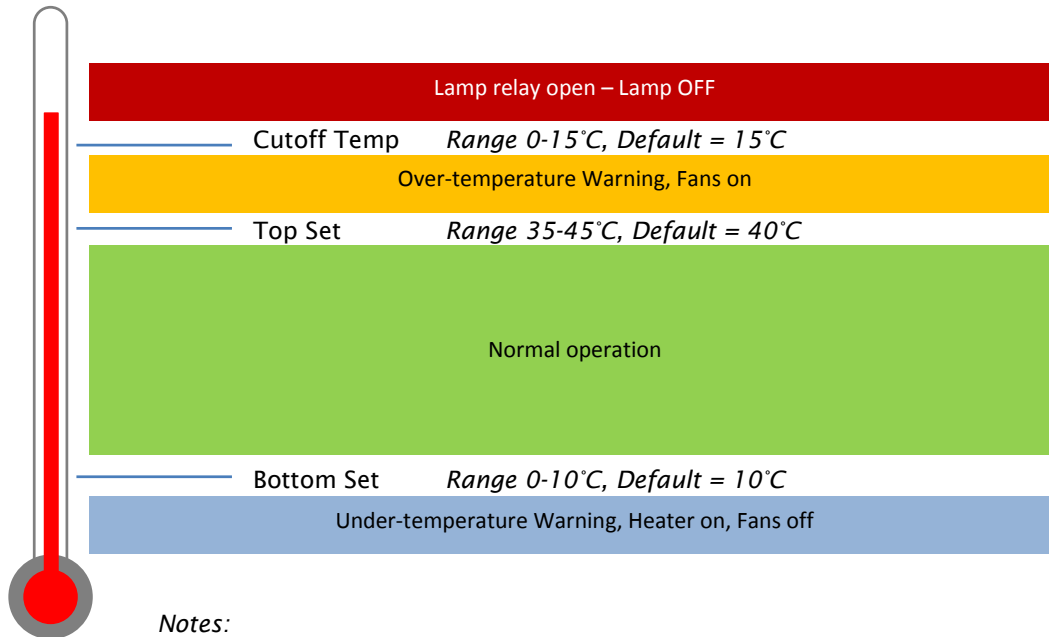
- As Basic mode, plus:
- Enclosure functions as a 1-channel DMX device, with remote control of the lamp relay
 - DMX level > 75% enables normal relay operation (normally ON)
 - DMX level < 25% disables normal relay operation (relay turns OFF)
 - This allows you to force a hard reset of the lamp relay in the event of a projector malfunction
- Control mode is recommended for show control applications, but can be risky in live show operation.

Service Mode

- For trained service personnel only
- Normal operation is suspended and the enclosure functions as a 3-channel DMX device:
 - Lamp Relay
 - Fans
 - Heater
- Service mode is ONLY for troubleshooting – DO NOT use Service mode for normal operation.

DEC3.2 Control Parameters

Temperature Settings:



Notes:

- 1 The Cutoff Temperature is an **incremental** temperature range above the Top Set temperature. So the default 15°C cutoff and 40°C Top Set means that the lamp relay will open when a temperature of 55°C is reached.
- 2 In moving light enclosures the temperature sensor is located in the exhaust airflow. Temperatures shown may be higher than those around the projector.
- 3 We recommend using the factory default settings for several weeks or months before making any changes. In most cases they will not be necessary.

Humidity	Range 50-90%, Default 80% The threshold at which incoming air is more aggressively heated to remove moisture.
DMX Address	Range 001-510, Default 001 Sets the DMX address for the lamp relay control.
Fan Overrun	Range 1-15 minutes, Default 5 minutes Time that the enclosure fan(s) will run after the projector/projector lamp is turned off.
Temp C/F	Display Degrees Celsius or Fahrenheit. Default Celsius Note that temperature settings must always be Celsius.
Lamp Hours	Default 0000 Counts lamp hours – you must reset to zero when changing lamps.

DMX Connections

DMX refers to USITT DMX512, a commonly used control protocol in the entertainment industry, running over RS485. Consult USITT DMX installation guidelines when laying out a system, or employ a qualified DMX system integrator.

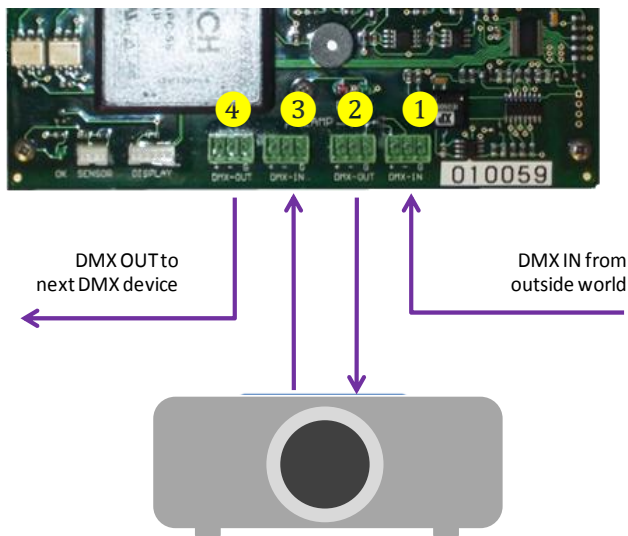
A DMX network will be required if:

- The projector inside the enclosure requires a DMX control signal
- You wish to monitor the enclosure using RDM
- You wish to control the enclosure lamp relay over DMX

DMX Terminations

Note: DMX will not normally be used in projector installations.

Pinout: (1) Ground, (2) Data -, (3) Data +.



DMX Connectors:

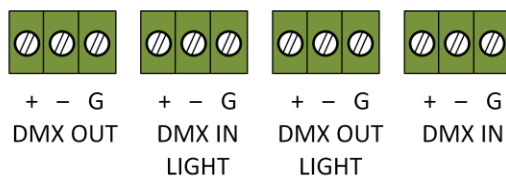
- DMX IN from network
- DMX OUT to projector (or to network if not controlling projector)
- DMX IN from projector
- DMX OUT to network

If the enclosed projector does not use DMX, then connector (2) on the controller is DMX OUT for the enclosure.

DMX Line Terminations

DMX cable runs must be terminated at the far end of the cable run with a termination resistor as detailed in the DMX512 standard.

DMX terminal Pinout Detail



The individual projectors installed inside the Tempest enclosures must NOT be terminated. It is recommended that any line termination is done using the 3-pin terminal connector fitted to the DEC3.2 control circuit board.

Remote Device Management (RDM)

RDM refers to ANSI E1.20, a control protocol in the entertainment industry used for device configuration and monitoring, and essentially an “extension” of DMX512. The use of RDM is optional, and uses *the same RS485 cable connection* as DMX512, so **no additional wiring** is required. The user must ensure that any DMX splitters or other routing devices used are rated for RDM as well as DMX use. Tempest strongly recommends working with a qualified RDM system integrator when designing an RDM network. Go to www.tempestlighting.com for contact information.

RDM and RDM Integration

DEC3.2’s RDM implementation allows system integrators to set up remote control and status monitoring of all attributes and sensors, including:

- Relative Humidity
- Air Temperature
- PCB Temperature
- Lamp Current
- Elapsed Lamp Hours
- Lamp Relay Status
- Fan Relay Status
- Heater Relay Status
- DMX Status
- DMX Start Address
- DMX Personality (RDM Mode)
- Device Type
- Device Label
- Software Version

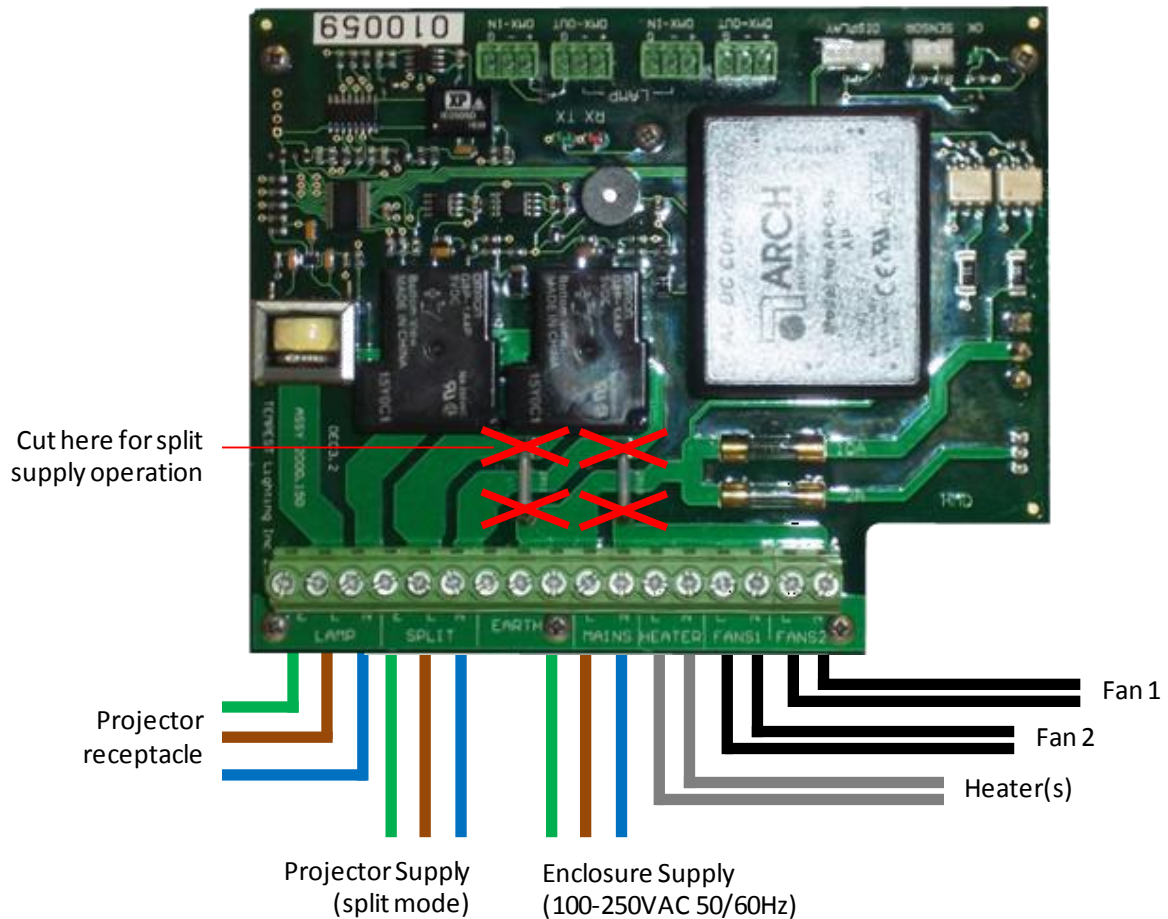


RDM is an effective and powerful tool for commissioning and monitoring an installation, particularly in large systems. For further guidance, please consult a qualified RDM system integrator. Tempest Lighting warrants DEC3.2 to be compliant with the RDM standard, but is not an RDM systems integrator, and can offer only basic guidance on RDM utilization.

Power Connections

IMPORTANT Tempest enclosures are supplied for either 120VAC 50/60Hz, or 208–240VAC, 50/60Hz operation. Tempest Lighting is not liable for damage or failure to operate correctly due to connection to an inappropriate electrical supply.

ALL ELECTRICAL CONNECTIONS MUST BE UNDERTAKEN BY A QUALIFIED ELECTRICIAN, IN COMPLIANCE WITH LOCAL NORMS AND STANDARDS.



Note: wire colors may differ depending on applicable electrical standards. European wire colors are shown here.

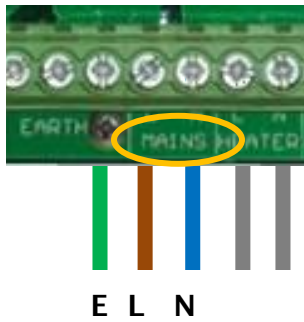
IMPORTANT: MAKE SURE THAT TERMINAL SCREWS ARE FULLY BACKED OUT BEFORE INSERTING WIRES.

Common Feed operation (factory default)

Enclosure and projector share the same electrical circuit.

Circuit must be powered ON 24/7.

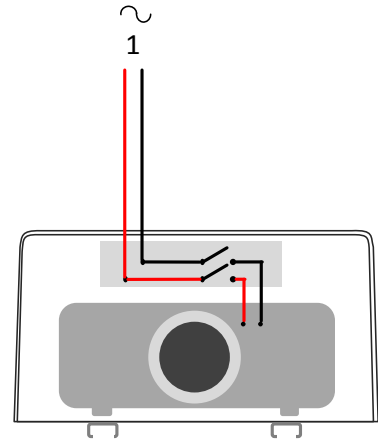
Connect incoming power to the terminals labeled **MAINS**:



(E) Earth/Ground

(L) Live

(N) Neutral

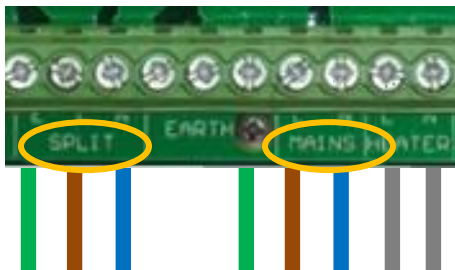
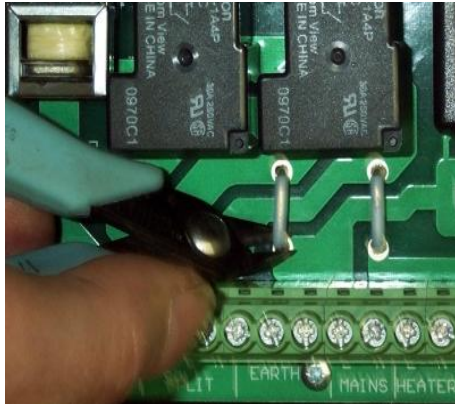


Split Feed Operation

Enclosure and projector have separate electrical feeds.

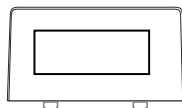
The enclosure circuit must be powered ON 24/7.

When splitting the feeders, both circuits should be on the same phase and at the same supply voltage.



E L N
Projector
Power

E L N
Enclosure
Power



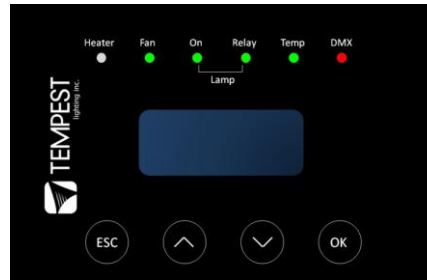
- 1 Use a wire cutter to cut the copper links on the DEC3.2 board in four places.
- 2 Connect incoming **ENCLOSURE** power to the terminals labeled **MAINS**. This supply **MUST** be maintained 24/7.

(E) Earth/Ground (L) Live (N) Neutral

- 3 Connect incoming **PROJECTOR** power to the terminals labeled **SPLIT**:

(E) Earth/Ground (L) Live (N) Neutral

Control Interface



LED Indicators

Heater	SHORT PULSES (green) ■ ■ ■ ■ ■ ■ ■ ■	Lamp is off Temperature is normal Heater is pulsing to prevent condensation
	ON (Green) ■■■■■■■■■■	Temperature is LOW Heater is ON
	OFF	Lamp is on Temperature is normal
Fan	PULSES (green) ■■ ■■■■■■ ■■■■■■	Lamp is off Temperature is normal Fan is moving small amount of air to prevent condensation
	ON (Green) ■■■■■■■■■■	Lamp is ON, or Temperature is HIGH Fan is cooling enclosure
Lamp On	ON (Green) ■■■■■■■■■■	Current sensing shows lamp is ON Lamp hour counter is running
	OFF	Current sensing shows lamp is OFF Lamp hour counter is not running
Lamp Relay	ON (Green) ■■■■■■■■■■	Lamp relay is closed (normal) Projector power receptacle is energized
	OFF	Lamp relay open (due to overtemp or DMX control). Projector is electrically isolated
Temp	ON (Green) ■■■■■■■■■■	Temperature is in normal range
	ON (Red) ■■■■■■■■■■	Temperature is above Top setting, or below bottom setting
	FLASHING (Red) ■ ■ ■ ■ ■ ■ ■ ■	Temperature is above Cutoff level Projector power is isolated
DMX	OFF	DEC3.2 is in BASIC Mode - DMX not used
	ON (GREEN) ■■■■■■■■■■	Good DMX or RDM data packet received.
	ON (RED) ■■■■■■■■■■	Control Mode: DMX Fail Monitor Mode: No RDM information being received (this is normal)

Control Interface Operation

The Control Interface is normally LOCKED.

To UNLOCK, hold **ESC** and **OK** together for 5 seconds.

You are now in the **CONTROL MENU**

Use **↑ ↓** to scroll up and down the menu.

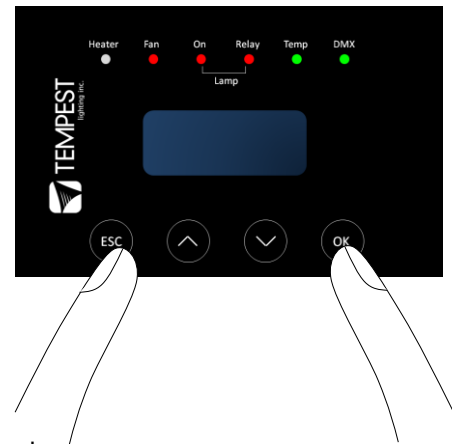
Press **OK** to enter a menu item

Use **↑ ↓** to set the item parameter, or to scroll to the next menu level.

Use **ESC** to go BACK, and **OK** to confirm settings (↵).

To LOCK, hold **ESC** for 5 seconds.

Menu will time out after ten minutes.



Control Menu

SET DMX ADDRESS (in Monitor, DMX or Service modes)

Select a DMX starting address in the range 001 to 510

1 – Lamp Relay

In Service Mode an addition two slots are available

2 – Fan Relay

3 – Heater Relay

Note that the DMX control is designed using a SAFETY pile-on Logic. So the DMX input can only override automatic settings in a safe manner.

SET DMX MODE

From the Front Panel, this menu item allows the user to check (and if necessary change) the RDM mode.

BASIC Standalone operation, no DMX/RDM (factory default)

MONITOR Standalone, plus support for RDM remote configuration and monitoring

CONTROL Monitor, plus use of a single DMX address to control Lamp relay

SERVICE Monitor, plus use of three DMX slots to control Lamp, heater and fan

Important: Please ensure that the DEC3.2 is NOT left in Service Mode.

STATUS DISPLAY

View current status information, using the arrow keys to scroll through:

- a) Humidity – relative humidity in %
- b) Firmware version
- c) Lamp Hours elapsed
- d) Current being drawn by projector/light projector, in amps
- e) PCB temperature
- f) Air temperature, in degrees C or F

RESET LAMP HOURS

Reset each time you change the lamp in the projector/projector.

Make this a part of your maintenance instructions.

HUMIDITY SET

The humidity level above which the heater kicks in to remove humidity from incoming air (default 80%, permissible range 50-90%).

SET FAN OVERRUN

Fan will keep running after projector lamp is sensed to change from ON to OFF, to allow the lamp to cool safely.

Default is 5 minutes, permissible range 0-15 minutes.

SET TEMP RANGES

Set three temperature trigger points for Bottom, Top and Cutoff temperatures, in °C.

TEMP BOTTOM

(default 10°C, permissible range 0-10°C).

TEMP TOP

(default 40°C, permissible range 35-45°C).

TEMP CUTOFF

(default 15°C, permissible range 0-15°C).

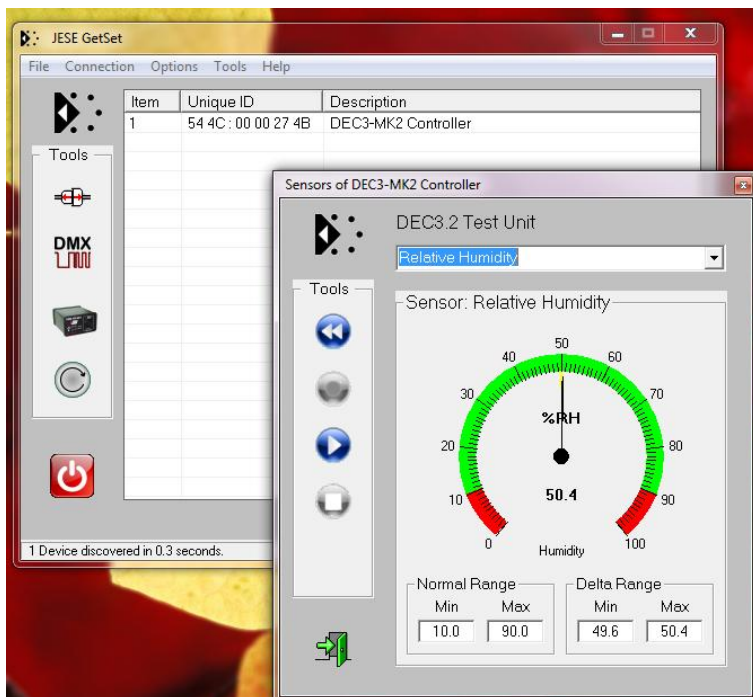
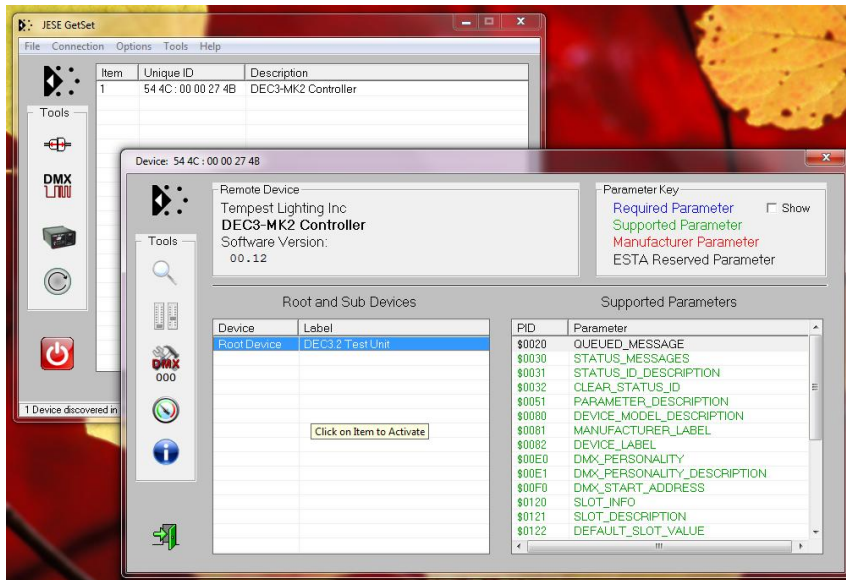
SET TEMP C OR F

Choose to display temperature values in Celsius or Fahrenheit (default Celsius)

Note that temperature settings must be entered in Celsius.

RDM Monitoring and Configuration

All the features accessible over the DEC3.2 control panel are also available over RDM. Just how this information is displayed will depend on the RDM interface used. These screen shots were taken running the GetSet program in Windows 7, and connecting to a DEC3.2 controller using a RDM TRI MK1 interface, both from JESE Ltd (www.jese.co.uk).



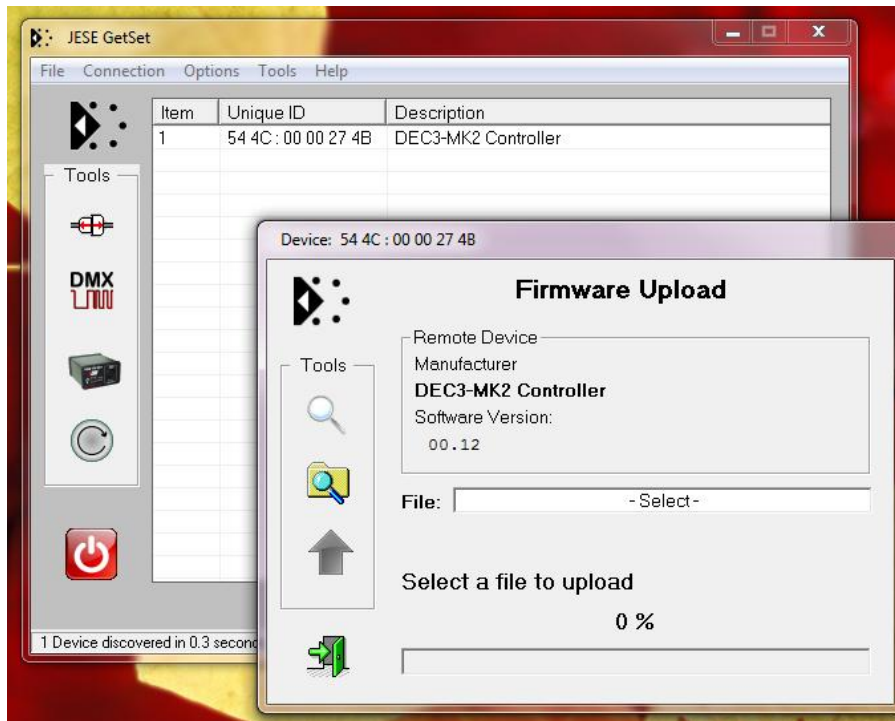
This view shows a single DEC3.2 test unit that has been correctly discovered and labeled by the GetSet software suite, and a log of RDM messages.

This RDM interface provides a graphic view of the various sensor functions supported by DEC3.2

Important:

Check that your RDM interface vendor has tested his interface with Tempest enclosures and all other RDM devices you plan to use on the same network.

Firmware Upgrade over RDM



DEC3.2 firmware is field-upgradeable, using RDM. A field upgrade requires a JESE RDM TRI MK1 interface to be connected to the DMX network on which the DEC3.2 is located, and the use of JESE GetSet software.